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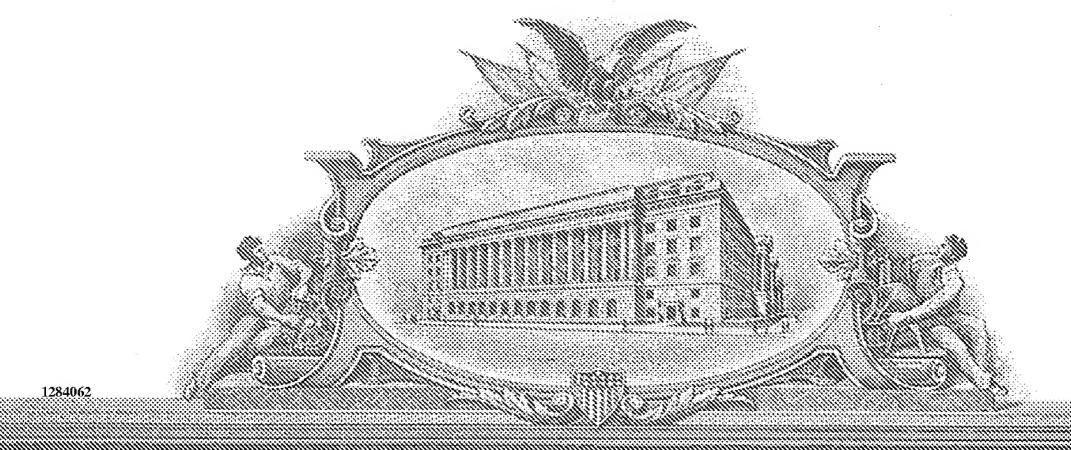
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#### UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

February 10, 2005

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FILING DATE: April 12, 2004

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PTO/SB/16 (5-03)
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### PROVISIONAL APPLICATION FOR PATENT COVER SHEET This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

INVENTOR(S) Residence Given Name (first and middle [if any]) Family Name or Surname (City and either State or Foreign Country) Jiuhuai Lu Palos Verdes Peninsula, California USA Additional inventors are being named on the separately numbered sheets attached hereto TITLE OF THE INVENTION (280 characters max) DIFFERENTIAL CODING WITH EXP-GOLOMB METHOD FOR CODING Q-MATRIX Direct all correspondence to: **CORRESPONDENCE ADDRESS** Customer Number Place Customer Number 0 Bar Code Label here OR Type Customer Number here Firm or Individual Name Snell & Wilmer LLP Address 1920 Main Street, Suite 1200 Address Irvine CA 92614 City State ZIP Telephone (949) 253-2700 **USA** Country (949)955-2507 Fax ENCLOSED APPLICATION PARTS (check all that apply) Specification Number of Pages 2 CD(s), Number Drawing(s) Number of Sheets Attachment - pages 1-4 Other (specify) Attachment - pages 1-94 Application Data Sheet. See 37 CFR 1.76 METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT (check one) **FILING FEE** AMOUNT (\$) A check or money order is enclosed to cover the filing fees The Director is hereby authorized to charge filing 19-2814 fees or credit any overpayment to Deposit Account Number \$160.00 Payment by credit card. Form PTO-2038 is attached. The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government. No. Yes, the name of the U.S. Government agency and the Government contract number are: Respectfully submitted, 4/12/04 Date SIGNATURE 25,124 REGISTRATION NO. Joseph W. Price (if appropriate) TYPED or PRINTED NAME **Docket Number:** 17366-3350 (949) 253-4921 TELEPHONE

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

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#### PROVISIONAL APPLICATION COVER SHEET

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## DIFFERENTIAL CODING WITH EXP-GOLOMB METHOD FOR CODING Q-MATRIX

#### **BACKGROUND OF THE INVENTION**

#### Field of the Invention

The present invention is directed to enabling quantization of matrices to be carried out and represented in a video coding system that contains intra-prediction and more particularly creating a series of cyclic difference values suitable for signed Exp-Golomb codes.

#### **DESCRIPTION OF RELATED ART**

The prior art is aware of quantization matrix for video coding and the applicability of Exp-Golomb codes. Video code has also been represented in hierarchical syntactic structure with associated semantics and has used both lossy and non-lossy or Variable Length Coding in video compression. Transform domain quantization has also been known and used.

#### **SUMMARY OF THE INVENTION**

The present invention describes a method and program for representing, carrying and enabling video compression by using quantization weighting matrices and addresses the following features:

- 1. Enable quantization matrices to be carried and represented in a video coding system that contains intra-prediction.
- 2. Define and carry quantization weighting matrices that can be implemented by integer based and division free computation.
- 3. Enable quantization matrices to be encoded in an efficient Cyclic Differential code and Exp-Glomb code.
- 4. Support quantization matrix representation that allows redundant weighting values to be derived at decoder side rather than being carried over communication transport data.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 shows an example mapping of two-dimensional matrix entries into a one-dimensional series according to an embodiment of the present invention.

#### BRIEF DESCRIPTION OF PREFERRED EMBODIMENT

See attached pages 1-4.